Veterinary Medicine and the Medical School Library*

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ABSTRACT

The study of veterinary medicine is becoming increasingly important in the progress of human medicine, and as a consequence the literature of veterinary medicine is assuming increased importance in the libraries of schools of human medicine. In the past decade programs in comparative medicine have been initiated in many centers, reestablishing the linkage between veterinary and human medicine.

Since 1966 the National Library of Medicine has assumed extra responsibilities in the collection and control of veterinary medical literature. Increased indexing has thus far been the major result, with a resultant increase in the need to consult veterinary journals. Advances in the veterinary curriculum and continued veterinary education have also increased demand for veterinary publications. Such demand must be foreseen and met by medical school libraries if they are to fulfill their obligations to the scholarly medical community.

THE literature of veterinary medicine has become increasingly important in the study of human medicine, and consequently in the areas of responsibility of the medical school library. Since the medical school library exists only as part of the medical school itself, it is necessary to define the relationship between veterinary medicine and schools of human medicine in order to show their areas of common concern better.

The most obvious point of contact between medical schools today and the practice of veterinary medicine is the laboratory animal facility. Laboratory animal care is a comparatively new, and still small, specialty in veterinary medicine. The 1965 veterinary survey (1) showed only 445 veterinarians in this specialty, although one educated guess (2) forecasts a tenfold increase in this number by 1975, a figure roughly equivalent to those now working primarily in large animal practice. Small though it may be, laboratory animal medicine is a specialty on the move, and the direction in which it is moving is that of the resurrected catch-phase "comparative medicine."

Comparative medicine is currently in vogue. Late in 1967, the National Institute of General Medical Sciences (NIGMS) held a Workshop Conference on Comparative Medicine (3), the fourth such conference held in the past decade. This one did at least come up with a definition of comparative medicine: "a study of the phenomena basic to the diseases of all species." It also made an urgent plea for the establishment of comparative medicine programs at medical centers, veterinary colleges, and zoological parks.

There is progress in this direction. One of the earliest "modern" programs in comparative medicine was in the field of comparative pathology. Studies in comparative pathology have been carried on at the Penrose Research Laboratory of the Zoological Society of Philadelphia since 1901 (4). These studies have been in close collaboration with the medical and veterinary medical schools of the University of Pennsylvania, with staff members holding joint appointments on the faculties of the university. The Armed Forces Institute of Pathology also carries on a strong program of comparative pathology (5).

In the broader field of comparative medicine, departments have for some time existed at such places as Bowman Gray and Stanford, and as an example of current developments, the University of Washington in Seattle established, on January 1, 1968, a Department of Experimental Animal Research in cooperation with the College of Veterinary Medicine at Washington State University in Pullman (6). This new

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department offers postgraduate programs for "veterinarians, physicians, and other scientists." Similarly, the University of Southern California has recently appointed three veterinarians as "clinical professors of pathology (comparative medicine)" (7). Other universities have announced plans to expand greatly their research programs in laboratory animal medicine, with National Institutes of Health funding (8).

The NIGMS Workshop Conference reported, with considerable understatement, that "many existing resources of animal disease material are not utilized to full capacity for contributing to comparative medicine." In other words, not enough is being done. We can be quite sure that more will be. As human medicine moves from its microbiological era to its degenerative-disease phase, the field of comparative medicine assumes ever greater importance.

One example of this increased importance is the international comparative medicine program of cardiovascular research, sponsored by the World Health Organization (9). The activity of WHO in this whole field can be illustrated by its designation in 1967 of the Nuffield Institute of Comparative Medicine in England as a collaborating center of the comparative pathology of nondomesticated vertebrates (10). Research at the Institute in 1967 included studies on viral and filarial disease in New World monkeys, trypanosomiasis, and primate nutrition—all investigations of direct interest to human medical research.

There is also the pioneering epidemiology project being developed at the National Cancer Institute, known as the Veterinary Medical Data Program (11, 12). This Program deserves a digression, since it is one of the strongest bits of evidence to date of the unity of medical science. The Program started when personnel at the National Cancer Institute had a need for retrospective data on animal neoplasia. To their surprise, such data were not available, at least not "in sufficient quantity and of adequate quality." Looking around, they found the same lack of veterinary clinical data in research areas other than cancer.

Commendably, they set up a pilot program to collect veterinary data "for all diseases in all domestic animals." A computer program was designed to correlate the data from patient history records, and went into operation in February 1964. Preceding this operation was the need for a defined vocabulary, which is why at last we have a *Standard Nomenclature of Veterinary Diseases and Operations* (13), a direct outcome of this program.

In early 1967 (12), the program was collecting information from seven academic veterinary hospitals and one state diagnostic laboratory, with future expansion planned. In addition, WHO has started a pilot adoption of the program in Europe, and the Food and Agricultural Organization is considering its adoption in Latin America. The potential use of the system in epizootic and epidemiologic research seems unlimited.

And yet there is really nothing that is new in this interaction between veterinary and human medicine. I am indebted to Dean Allam of the University of Pennsylvania School of Veterinary Medicine for the information (14) that Benjamin Rush started his course of lectures in 1807 with an address, "The Duties and Advantages of Studying the Disease of Domestic Animals." Dr. Rush felt that "physicians . . . should interest themselves in the subject not only from consideration of kindness to dumb creatures and the practical benefit to farmers, but also because a study of animal diseases throws light on those of man."

The historical perspective can be pushed farther back, of course, than this (15). The earliest recorded true veterinary literature is probably the Kahum Papyrus written in Egypt about 1800 B.C. The famous Code of Hammurabi, dating from 1700 B.C., recorded fees and regulations for veterinary practice as well as for the practice of human medicine. Most of Galen's anatomic work was done from lower animals, and the medical school at Padua, which both Vesalius and Harvey attended, had a veterinary chair and a veterinary anatomical theater.

In more recent times, the interaction of veterinary and human medicine can be underlined merely by citing such names as Jenner, Koch, Osler, and Theobald Smith. It was Smith, working with Salmon at the USDA Bureau of Animal Industry, who gave the world dead vaccines and changed the face of preventive medicine. Another such specific effect on human medicine came from the invention of the tuberculin test by Bang, while tuberculosis chemotherapy dates from the work of William Feldman, a veterinarian on the staff of the Mayo Clinic. It would be easy to go on at great length with such instances

(including the famous example of the development of Dicumarol from Shofield's observations of sweet clover disease in cattle) without even mentioning that sturdy bridge between veterinary medicine and human health, the zoonoses.

It might be as well here to remind ourselves where veterinary medicine and human medicine depart as well as meet. In undertaking the health care of many animal species, veterinary medicine is, of course, quite distinct from human medicine. The zoonotic bridge, however, quickly leads us from animal diseases to human public health. And here veterinary medicine goes beyond human medicine when public health is taken in its broadest sense, for with its profound influence on agriculture and animal husbandry, veterinary science influences the ecology of hunger and disease throughout the world.

Calvin Schwabe (16) puts it more succinctly:

> Human medicine has been . . . a benevolent approach to diseases in the individual; veterinary medicine has been an economic approach to disease in a population. Only in public health has the population approach . . . entered into human medicine. In the development of public health, human medicine and veterinary medicine have come to experience a common . . . base.

What is surprising in this is that Schwabe's book, *Veterinary Medicine and Human Health,* was published as recently as 1964 and is the first book specifically on this subject. Similarly, the recently founded Association of Teachers of Veterinary Public Health and Preventive Medicine (17) has as its aim "to demonstrate . . . the need for trained public health veterinarians." Certainly this need has long been recognized by governments throughout the world, and by such international organizations as WHO and FAO (18). As Dean Allam put it, in the article cited earlier, "the concept of 'One Medicine' has never been closer to realization."

We would seem to have come a long way from the library, but in reality we have not. The reawakening to a recognition of the bonds between veterinary and human medicine is having an effect on the control of the literature of veterinary science. Until recently, in the United States, veterinary literature was considered on the national level to be the preserve of the National Agricultural Library (formerly the USDA Library). In the past two or three years, however, the National Agricultural Library, the National Library of Medicine, and the Library of Congress have come together and talked things over (19).

The National Library of Medicine (NLM) now has an Advisory Panel on Veterinary Medicine, under the direction of Fritz Gluckstein, D.V.M., Coordinator for Veterinary Affairs, and has taken on the responsibility for collecting in depth, and organizing, veterinary literature. The National Agricultural Library will continue to have primary responsibility for the literature of agriculture and animal husbandry, and the Library of Congress will collect definitively in zoology.

The first task of the Panel on Veterinary Medicine was to review the categories in *Medical Subject Headings* (*MeSH*) of interest to veterinarians. Many new veterinary subject headings have been introduced into the 1968 *MeSH,* and this project is continuing. Cooperating with NLM, or expressing interest in this vocabulary work, are the NAS–NRC Institute of Laboratory Animal Resources, the editors of the *Standard Nomenclature of Veterinary Diseases and Operations,* and the FDA Bureau of Veterinary Medicine. It is one measure of the recent recognition of the importance of veterinary medicine that the FDA Bureau of Veterinary Medicine was established as a coequal of the FDA Bureau of Medicine only in November, 1965, prior to that time being a Division, subordinate to and administered by the Bureau of Medicine (20).

Paralleling the work of the Panel is that of the Agricultural Vocabulary Project in producing a vocabulary for the Current Research Information System of the Department of Agriculture (21). While NLM and the National Agricultural Library (NAL) do not have a common vocabulary, Dr. Gluckstein reports that "the Panel attempts to achieve a high degree of compatability between the veterinary terms in *MeSH* and those in NAL's *Agricultural/Biological Vocabulary.*"

Meanwhile, NLM is including veterinary medicine journals in MEDLARS and *Index Medicus,* and it is collecting more veterinary literature. The 1966/67 *Annual Report* of the Library indicates that at that time NLM was receiving 160 of the estimated 350 veterinary journals in existence (an increase of one-third over veterinary subscriptions of the previous year), and had a veterinary book stock of some

2,000 volumes (again, a one-third annual increase). Currently, only fifty veterinary journals are being indexed in *Index Medicus,* but the reason for this is economic. Meanwhile, the American Veterinary Medical Association is considering funding a full-time indexer at NLM to increase veterinary coverage, and should this come to pass, *Index Medicus* will include much more veterinary material.

As librarians well know, indexing not only makes the material indexed more available, but also increases the demand for its use. In fiscal year 1967, NLM compiled 135 demand bibliographies in veterinary medicine from its computer files, and this is only the beginning. Under Dr. Gluckstein's leadership, a number of other projects are planned.

These projects include collection, control, and user studies. Theses are still an important part of veterinary literature, and NLM plans to collect them on a world-wide basis, and to issue listings of them. Also under way is an informal analysis of veterinary reference questions and interlibrary loan requests, in order to learn who needs to know what. Original plans for a bibliography of veterinary history have been realized by the inclusion of citations on veterinary medicine and animals in the annual *Bibliography of the History of Medicine* (22).

Still in the "thinking" stage are a recurring bibliography of laboratory animal medicine, a guide to the veterinary literature, and a catalog of veterinary periodicals; these are all badly needed. The recurring bibliography would doubtless be more comprehensive than the AEC's *Laboratory Animal Science: A Review of the Literature* (23), which is currently serving to fill this gap. A comprehensive guide to the literature is presently nonexistent, and the listing in Blake and Roos' *Medical Reference Works, 1679–1966* (24), is shamefully inadequate. (The authors do point out that the veterinary listing is "more selective than for most other subjects," and prove it by noting only thirty reference works from 1863 to date.) A catalog of veterinary periodicals would fill yet another void: Blake and Roos note only the 136-title listing published by NAL in 1963 (25).

In other words, the medical library world is finally awakening to the importance of veterinary literature. Special veterinary medical libraries, of course, have long existed at the established veterinary colleges. According to the 1965 Medical Library Association survey (26), volume holdings ranged from 2,100 to 41,000 volumes, with the mean being about a 12,000-volume collection and an 800-title subscription list. These figures necessarily reflect holdings in human medicine, zoology, public health, etc., as well as veterinary medicine. Now that NLM is making an attack on the problem, all of us having access to the biomedical library network will be able to take advantage of the increased control and enhanced resources.

A corollary to this will be the need for medical school libraries throughout the country to increase their own holdings in veterinary medicine publications of all kinds. Demand follows control, and there is no substitute for local holdings of the most needed materials. There is no question that demand will follow, now that medical scientists of both the veterinary and human disciplines will have access to the veterinary literature as never before.

The need for such access, from the point of view of the veterinary profession alone, is undeniable. Veterinary medicine, like all of the health sciences professions, is undergoing a process of specialization that demands increased access to the scholarly record. While there are only four recognized veterinary specialties (pathology, public health, laboratory animal medicine, and radiology) there are an additional three specialties with probationary approval (surgery, toxicology, and microbiology) and some fifty "special interest groups" within the AVMA (27). As Spangler put it in 1966, when he was the AVMA president, specialism *will* develop as "an intelligent response . . . to the needs of modern society" (28).

Also, veterinary medicine is advancing so rapidly that keeping up with new knowledge has become a necessity. The veterinary school curriculum today includes far more than it did a few years ago, and research training is finding its rightful place in the undergraduate veterinary curriculum (29, 30). The post-World War II development of veterinary education has seen improved teaching and research standards, an integration with the whole field of biomedical science and a parallel development, and most recently, advanced training in the clinical specialties. Today's graduate is simply better educated than yesterday's. Those of us who are

"yesterday's graduates" in any field have to meet this challenge to our expertise and find ways to keep up with new knowledge.

The necessity for formal continuing education is well recognized by the veterinary profession. Each issue of the AVMA's *Journal* has a listing of available "Courses in Continuing Education." Such courses are many and regular, and include not only veterinary college continuing education courses, but also such outstanding continuing programs as those of the Armed Forces Institute of Pathology and the National Communicable Disease Center. In a recent symposium on clinical veterinary education (31), as much stress was placed on continuing education as on predoctoral training.

It was a veterinarian who said (32) that continuing education is "like patriotism and motherhood . . . an 'all-American virtue' . . . but like some other acknowledged virtues . . . is not widely practised." The AVMA Advisory Committee on Continuing Education has sterner words (33):

> The half-life of veterinary education gained in an undergraduate curriculum is ten years. If a practitioner is outdated in ten years, one is completely obsolete in fifteen or twenty years unless he has engaged wholeheartedly in a personal program of continuing education.

The Committee then endears itself to librarians by adding that "regular reading is . . . one of the best ways to keep abreast of the latest information." Schwabe (15c) also stresses the need to keep up to date. Among his suggestions for ways to achieve this goal, he includes the recommendation that one visit a good library on a regular basis at least once a month, especially for current journal scanning.

The duty of medical school libraries, then, is obvious. They must make available the literature that will be requested. Under NLM's leadership, they must be prepared to give service in depth from the veterinary literature. They must provide the current literature for the continuing education of both veterinarians and practitioners of human medicine and keep abreast of its control. We can hardly claim a service philosophy for medical librarianship if only lip service is paid to one large area of biomedical knowledge. It is the duty of us all to meet this renewed challenge of "comparative medicine."

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